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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/697,770 | 10/27/2000 | Joseph Shapira | PM 268445 | 4437 |

7590 10/06/2004
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ARLINGTON, VA 22202

EXAMINER

JACKSON, BLANE J

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2685

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 09/697,770 | Applicant(s) SHAPIRA ET AL. | |
| | Examiner Blane J Jackson | Art Unit 2685 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8,9 and 11-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-28 is/are allowed.
- 6) ☒ Claim(s) 1-6,8,9 and 11-22 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see the Applicant's Remarks, filed 29 June 2004, with respect to the rejection(s) of claim(s) 1-28 under U.S.C. 102 or 35 U.S.C. 103A have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection of claims 1-6, 8, 9, 11-22 is made in view of newly found prior art.

Drawings

2. A new informal drawing was received on 29 June 2004 that contains clarifying information but lacks an identifying legend. A formal and corrected drawing is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6, 8, 9, 11-14 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapira et al. 6,640,110) with a view to Eidson (U.S. 6,411,824).

As to claims 1, 2, 9, 11, 12, 13 and 14, Shapira teaches a method for augmenting an existing base stations including a main antenna array having a transmit and receive

Art Unit: 2685

elements and a diversity antenna array having receive elements, said existing base station thereby providing receive diversity (Shapira teaches an awareness of base stations configured for diversity techniques such as spatial, time, angle and polarization diversity, column 2, lines 27-48 and figure 21 depicts an embodiment for receive diversity, receive antenna array (486) provides spatial diversity comprised of selected modular radiator sub-units, figures 2 and 3, column 8, lines 1-21).

Shapira discusses the standard uniform modular active radiator sub-units may be used to facilitate change modification and scalability of the system (column 19, lines 54-65) but is silent as to specifically replacing the diversity antenna array with a new diversity antenna array comprising both receive and transmit elements, said replacing being to augment said existing base station to provide both transmit and receive diversity but teaches a modular system being capable of reconfiguration for various styles and types of diversity.

Eidson teaches a transmit/ receive, spatial and/or polarization diversity system for use in a base station of a cellular system. Like Shapira, teaches an independent relationship between the transmit and receive path portions for several advantages including a flexibility in arrangement of the system co-located antenna arrays. In figure 6B, the simple depiction of antenna elements (522, 520 and 524) represent three spatially separated and uniquely polarized arrays for diversity transmit and the antenna elements of (634, 636 and 638) are disposed similar but for diversity receive, column 14, lines 1-48, column 17, line 58 to column 18, line 6.

Art Unit: 2685

It would have been obvious to one of ordinary skill in the art at the time of the invention to upgrade when desired the modular system of Shapira to any of the discussed and demonstrated diversity schemes as taught by Eidson to optimize the system to reduce multipath fading and dispersion due to motion changes of the mobile cellular telephone user.

As to claims 3 and 17, Shapira teaches the receive and transmit elements of the new diversity antenna array are active, each antenna element being associated with an amplifier and a band pass filter located at the top of a building (figure 21, equipment for mounting at elevation on a pole, tower or building, column 6, lines 5-21, column 8, line 1-51).

As for claims 4 and 18, Shapira teaches modular radiator sub-units that combine a linearized power amplifier and filter for transmission and a low noise amplifier and filter for reception (figure 21, transmit (480), receive (482), column 8, lines 1-10), column 19, 33-37, column 7, lines 58-67).

As to claims 5 and 6, Shapira teaches the main antenna receive and transmit elements comprises a receiver antenna array and transmitter antenna array (figure 21, transmit and receive antenna groups (476)).

As to claim 8, Shapira teaches the receive elements of the diversity antenna comprises a passive antenna (figure 21, receive antenna (486) itself is passive but with subsequent amplification to match the SNR of the other receive antennas, column 19, lines 33-40).

As to claims 16, with respect to the method elements of claim a, Shipira also teaches at least a portion of the antenna array arrangement includes a passive antenna array, the existing antenna array thereby having receive diversity (the antenna array represented as diversity (486) or *variations thereof* of figure 21 provides the spatial separation to the main antenna elements (476), column 19, lines 25-37), and

Locating the active antenna array at the top of a building (figure 6A, cellular modular equipment is mounted atop a pole (78) or equivalent building or tower, column 8, lines 1-23).

As to claims 19-21, Shapira teaches both the main antenna and diversity antenna array comprises the passive antenna array (figure 6B, an example of the main antenna array and figure 21, main antenna array (486) and diversity antenna array (486)).

Allowable Subject Matter

Art Unit: 2685

5. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 23-28 are allowed. The prior art made of record does not teach the details of a method for augmenting an existing base station including coupling a directional coupler to the main antenna array and to new diversity antenna array to sample a transmit signal emitted from the main antenna array and connecting an isolator to the main antenna array in order to control spurious emissions emitted from the base station.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

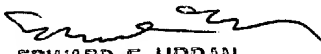
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J Jackson whose telephone number is (703) 305-5291. The examiner can normally be reached on Monday through Friday, 8:00 AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (703) 305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJJ


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